

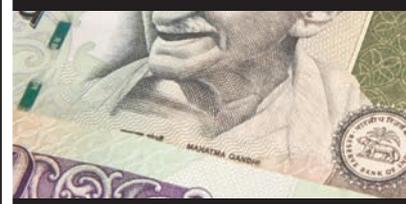
Education, globalisation and the knowledge economy

A Commentary by the Teaching and Learning Research Programme



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Governments all over the world want their countries to have high-value, high-skill economies, and they realise that the first step towards this aim is to have a well-educated workforce. In the UK, an appreciation of the connection between economic success and education has led to widening participation in university, as well as lifelong learning, becoming new political priorities.

But this Commentary from the Teaching and Learning Research Programme shows that this policy prescription may not be enough to avert a significant attack on skilled and professional employment in the UK.

It reports on ground-breaking research with multinational corporations around the world which suggests that policy-makers have yet to appreciate the fundamental shifts which are now taking place in the way companies use skilled people. Large firms are increasingly aware that emerging economies, especially but not exclusively India and China, are building up their education systems at a rapid rate. Leading corporations are abandoning the idea that high-end activities such as research and design have to go on in the high-cost economies of Europe, North America or Japan. Instead, they are developing ways in which high-value work can be standardised, as manual work already has been. Once this is achieved, high-skill people in low-cost countries suddenly become an attractive option for multinationals.

This means that we may be entering an era in which many of the young people now investing heavily in their education across the developed world may struggle to attain the comfortable jobs and careers to which they aspire. They risk being bypassed by decisions to send work that would once have come their way naturally to people in Asia and elsewhere, who bring the same skills to employers at much lower prices.

These insights are fascinating in their implications for the future of UK education and employment. Many of the assumptions about the knowledge economy are now in question. The study also demonstrates the need for a new 'great debate' about the future of education and skills and their relationship to careers, prosperity and social justice in a global economy.

This TLRP Commentary is one of a series on topics ranging from science education to apprenticeship. We hope you find it valuable, and welcome your response via our web site www.esrc.ac.uk.

Professor Ian Diamond FBA AcSS
Chief Executive
The Economic and Social Research Council



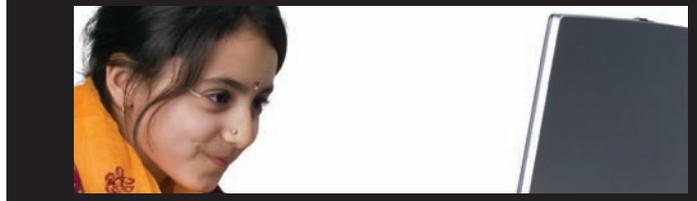
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This Commentary has been written by Phillip Brown, Hugh Lauder, and David Ashton on behalf of TLRP (September 2008).

For further TLRP material on Globalisation, please see: http://www.tlrp.org/proj/phase111/assoc_brown.html

For related material on workplace learning, visit:
<http://www.tlrp.org/themes/themes/workplaceov.html>
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Introduction: education, globalisation and the knowledge economy

The global skills race

In common with other developed economies, Britain has advocated the creation of a high-skilled, high-waged economy by upgrading the education and skills of its workforce. The creation of world-class skills is assumed to be a route to economic prosperity, reduced income inequalities and social cohesion.¹ Such policy prescriptions rest on the idea of a knowledge economy where innovative ideas and technical expertise hold the key to the new global competitive challenge. While Britain's workforce can no longer rely on low skilled manufacturing jobs to provide a living wage, as these jobs migrate to low-cost economies in Eastern Europe and Asia, it is commonly argued that Britain is well placed to become a 'magnet' economy, supplying the global economy with high skilled, high waged workers.

But the recent success of China and India in moving into the production of high value-added, high-technology products has caused political leaders and their advisors to re-evaluate the global economic challenge. The OECD recently acknowledged that emerging economies including China and India were moving up the value chain to compete with Western companies for high-tech products and R&D investment.²

Under the re-evaluation that has accompanied this new insight, a win-win scenario emerges, not through the quality of the high-tech goods produced in the West but through the ability of Western economies to introduce change, innovation and productivity growth. The policy implications are to support innovation and entrepreneurship by producing 'more highly skilled workers' through education and training policy focused on life-long learning, in order to sustain a shift toward more high value-added activities that might remain within the economies of the OECD.

Prime Minister Gordon Brown (2008) recently announced that the UK had entered a 'global skills race' (see box below).³ Within this race, education, knowledge and skills assume ever-greater importance. The challenge is to outsmart other national economies - whether established or emerging - in the 'knowledge wars' of the future.⁴

'Already our Asian rivals are competing not just in low-skilled manufacturing, but in high-tech products and services. Once, we worried about a global arms race. The challenge this century is a global skills race and that is why we need to push ahead faster with our reforms to extend education opportunities for all...In a globally competitive national economy, there will be almost no limits to aspirations for upward mobility. Globalisation dictates that the nations that succeed will be those that bring out the best in people and their potential. And this is the new opportunity for Britain. Put simply: in the past, we unlocked only some of the talents of some of the people; the challenge now is to unlock all the talents of all of the people.'

Prime Minister Gordon Brown





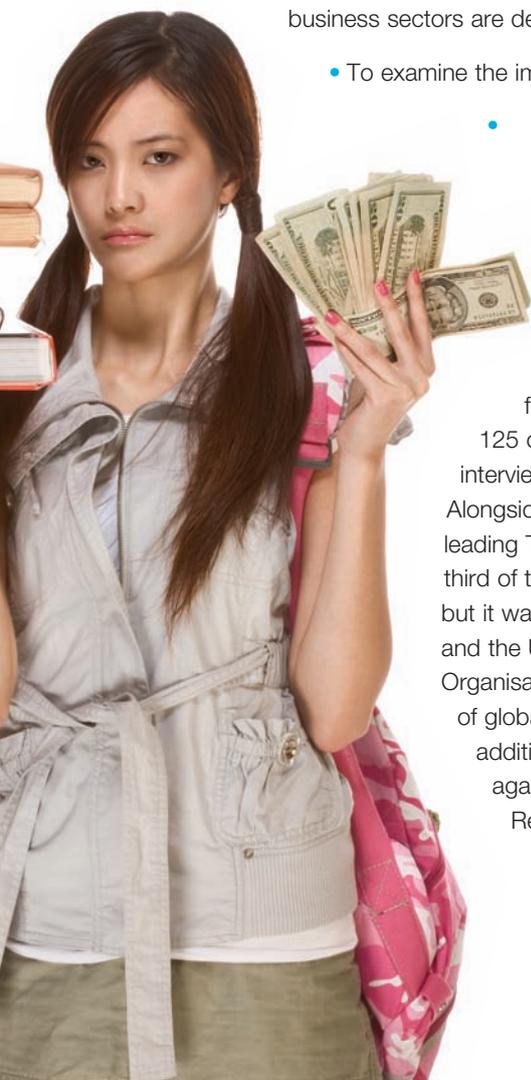
About the Study

The project on which this TLRP Commentary is based aimed to investigate whether ideas about a global skills race find support in the actions of leading transnational companies and in the national strategies of emerging economies. Despite much talk about globalisation and the knowledge economy, there is a surprising lack of recent empirical research into the skills strategies of transnational companies (TNCs) or the skill formation strategies of emerging nations, including China and India. The project aimed to locate Western debates about the global knowledge economy in a comparative context. Do policy-makers in emerging economies such as China and India understand their role in the global economy in the same way as commentators in the West? Rosecrance (1999), for example, has suggested that the world is divided between 'head' nations such as Britain and the United States, and 'body' nations such as China that offer a new productive relationship to the benefit of each nation.⁵ This project offers an initial assessment of whether the global knowledge-based economy is likely to meet the political aspirations of national governments and the social and economic aspirations of students and workers in Western countries, especially Britain.

The main research aims and objectives of the study were:

- To conduct a comparative study of the skill strategies of transnational companies in the context of increasing global economic integration
- To examine the extent to which leading transnational companies from different 'home' countries and business sectors are developing global skill formation strategies
 - To examine the impact of these strategies on national systems of skill formation
 - To identify the importance of 'skill' as a factor in the decision to locate capital investment
 - To make a major contribution to theories of globalisation, skill formation and the state, and to our understanding of the role of TNCs in strategies of national competitiveness.

The research was based on a seven-country study of Britain, China, Germany, India, Korea, Singapore and the United States. We conducted 190 in-depth face-to-face interviews with company officials and policy-makers. There were 125 company interviews of which 105 were conducted outside the UK, and 65 policy interviews, including 22 in the UK. Interviews were conducted between 2004 and 2007. Alongside interviews with senior policy advisors in each of these countries, we focused on leading TNCs in four sectors – automotive, electronics, financial services and telecoms. A third of the companies involved in this project had their home base in the United States, but it was designed to include transnational companies from China, Germany, India, Korea and the United Kingdom. With additional funding from the Centre for Knowledge, Skills and Organisational Performance (SKOPE), we also conducted a detailed statistical assessment of global trends in education, employment and the job market. We have recently received additional funds to undertake a 12 month follow-up study beginning in October 2008, again with the support of SKOPE, a funded Centre of the UK's Economic and Social Research Council.





The globalisation of high skills

The argument that a knowledge-driven economy demands a larger proportion of the workforce with a university education and with access to lifelong learning opportunities has had a major impact on participation rates in tertiary education. Whatever the merits of the economic case for expanding higher education, there has been major growth in all OECD countries. Canada was the first country to achieve the target of over 50 percent of people aged 25 and 34 to enter the job market with a tertiary level qualification, followed by Korea, which has engineered a massive growth in tertiary provision since 1991.

But what our studies reveal is that this expansion has not been limited to the developed economies. Within a decade there has been a 'great doubling' of university enrolments around the world, reaching close to 63 million by 2005. This is leading to a massive increase in the global supply of highly educated workers, able to compete on price as well as knowledge.⁶

China now has more students in tertiary education than the United States and this gap is likely to grow in the future (See Figure 1). India has also witnessed a significant expansion since 1990 and has announced ambitious plans for a five-fold increase in government expenditure on education between 2007 and 2012.

Although the quality of education is likely to vary in countries experiencing rapid expansion of educational provision, it is nevertheless the case that Asia is producing more engineers and physical scientists than Europe and North America combined. Asia is already producing twice as many engineers as America and Europe together. In the US, close to half of those gaining a doctoral degree in engineering, mathematics and computer science are foreign students.

In the UK, home students make up less than half those following postgraduate degrees in science subjects. Even in computing, a discipline that stands at the heart of high-tech industry, numbers have fallen. The number of UK computing students in higher education fell by 22.3 percent in the three years between 2003 and 2006, a decline of over 30,000 students. During the same period the numbers taking A-level computing fell by 33.9 percent from 8,488 to 5,610.⁷

Although we need to treat the available comparative statistics as indicative rather than conclusive, our interviews found little evidence that China or India were content with doing the 'body' work within the global economy while the 'brain' work is left to the developed economies such as Britain, Germany, Japan, and the United States. Equally, the rapid expansion of tertiary education in China and India is more than a beauty contest aimed at attracting investment from Western multinational companies. These countries are also using it to build a high-tech research infrastructure that can serve as a springboard for the creation of their own national champions.

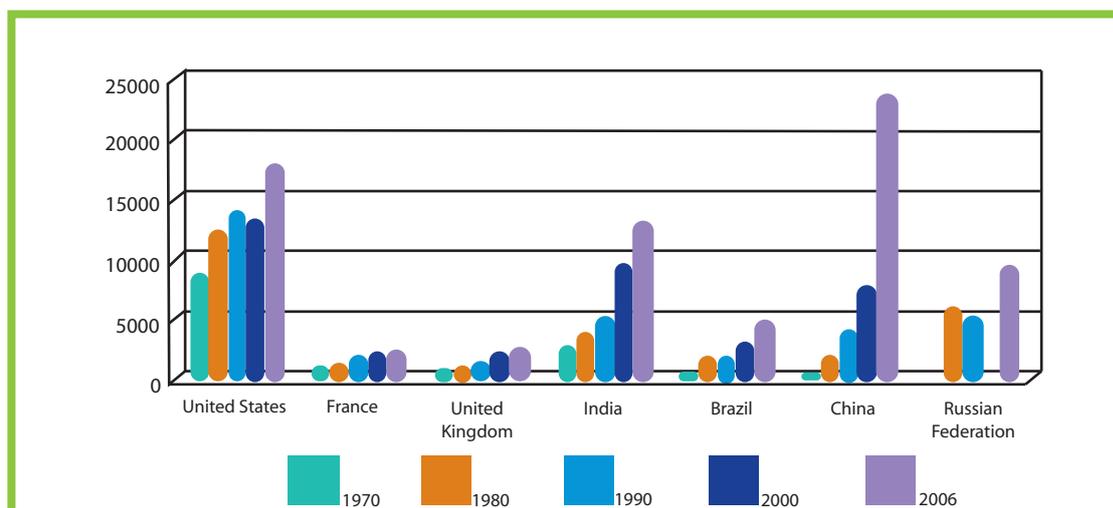


Figure 1 Students in tertiary education⁸



Competition based on quality and cost

Companies have consistently tried to improve quality while reducing their costs. But these attempts have been limited by the problems of delivering high-quality goods and services in lower-cost emerging economies. While these issues remain, companies reported a rapid narrowing of this quality and productivity gap, which in turn is transforming the way they think about the global supply of talent. The new competition is based on quality and cost, challenging Western assumptions about the inherent competitive advantage of the developed economies for high skilled, high value economic activity.

Factors driving the new competition include:

- An increasingly competitive environment where old and new competitors consistently up the ante in pursuit of competitive advantage;
- Rapid economic development in China, India and other emerging economies, enabling them to compete for high-value work. These countries have been able to leapfrog decades of technological developments in the West, for example by the introduction of cellular mobile communications;
- An increasing supply of highly educated workers, especially in China, which now has more people in higher education than the United States;
- A shift towards the global alignment of business processes and the international benchmarking of quality standards, facilitated by new technologies.

In the late 1990s, as part of an earlier ESRC project, we asked a leading German car manufacturer whether they could make their executive range anywhere in the world. The answer was an emphatic 'no'. Today it's an equally emphatic 'yes'. Another car maker, this time from the United States, added, 'If you had asked me five years ago I would have said that the skill sets probably are still in the advanced economies, but I think that is changing very, very quickly...The advantage from our perspective is that you are paying those guys anywhere from sort of \$12-15,000 a year versus say a European or a US engineer at anywhere from \$75,000 to \$95,000 a year, with a whole bunch of benefits as well.'

Our research shows how the quality revolution is gathering pace. It highlights the rapidity with which quality standards are improving around the world, making it more difficult for highly qualified workers in developed economies to shelter from the global competition for jobs. But as the performance gap narrows rapidly, differences in labour costs between developed and developing economies are narrowing far more slowly apart except in a few hot spots in China and India. Even here there is still a long way to go before the price advantage is seriously eroded. Consequently, companies have greater scope to extract value from international webs of people, processes and suppliers, based on a Dutch or reverse auction where quality is maintained while labour costs go down.





Global skill webs

Our empirical investigation of the skill formation strategies of 30 leading companies across seven countries found that skill and human resource issues had become more important to corporate competitive advantage. This was to be expected given the current focus on innovation and intellectual capital across all business sectors, but skills issues have taken on wider corporate significance in a context of economic globalisation.

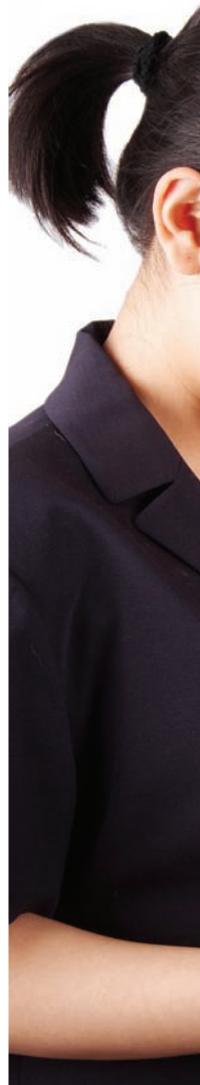
Companies no longer need to divide their skills strategies between high-cost 'head' nations employing high skilled, high-waged workers, and 'body' nations that are restricted to low skilled, low waged employment. This change has come about via a combination of factors including the rapid expansion in the global supply of high skilled workers, in low-cost as well as high-cost economies, advances in information technologies, and rapid improvements in quality standards in emerging economies, including the capability to undertake research and development.

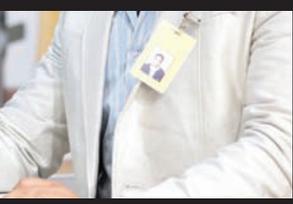
First wave globalisation in the 1980s and 1990s involved companies creating borderless value chains that were limited to low-skilled, low-value work, while virtually all higher value activities stayed close to the home base. Some companies experimented with offshoring applied research and development, design, marketing, and some other functions to China and India, but this trend was both limited and piecemeal. Human resource strategies including talent management were tailored to national contexts. Companies' access to intermediate and high skilled workers was limited by national education and training systems.

Today's second wave globalisation is giving TNCs much greater control over their sourcing options along the whole length of the value chain. These companies are seeking to globally integrate key aspects of their human resource functions, especially talent management, and to make more strategic decisions that challenge most of their preconceived ideas about what can be done where, especially in terms of high skilled, high value work. The home base remains a key location for developing and coordinating corporate strategies, but the trend is towards greater experimentation with high end work in low cost locations. This may be thought of as a shift from a Toblerone model of organisation - with each national market having its own company hierarchy, including the training function - to a melted Chocolate Orange, where borders and boundaries become increasingly irrelevant within an overall global organisation.

The trends identified in this study suggest that a defining feature of the shift from multinational to transnational companies is the development of global webs of high, medium and low skilled work that straddle national borders, and where a growing proportion of high value work is located in low-cost countries such as China and India. The global distribution of labour becomes a potential source of competitive advantage because companies have more sourcing options. These may or may not be superior to the strategies deployed by competitors. But the value derived from these webs is not simply the connection between isolated individuals, companies and suppliers scattered around the world. Much of the value is embedded in the network itself.

There is, however, little evidence of convergence in the skill formation strategies of companies participating in this study. While some US and British companies were developing global skill webs based on a 'transactional' model of short-term profit maximisation and cost reduction, others, especially from mainland Europe, have adopted a 'transformational' model aimed at developing global corporate capacity over the medium term, at the same time as having to respond to increasing price competition from competitors.





Where to think?

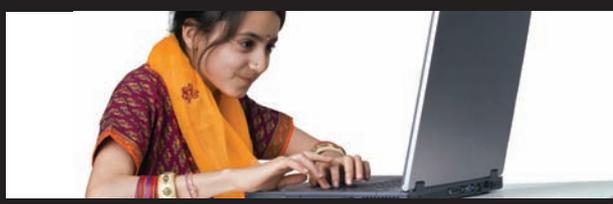
Innovation remains a crucial source of competitive advantage as mass customisation has assumed greater importance in virtually all industrial sectors. The demand for constant innovation has also been fuelled by rapid technological advance and change in consumer tastes. Over 80 per cent of BMW Minis produced in Britain for the global market are built to customer order, offering a range of over 250 factory-fit options and dealer-fit accessories, making every Mini uniquely similar. There are increasing pressures on transnational companies to increase the speed and reduce the cost of innovation. They cannot ignore the competitive pressures to make use of intellectual arbitrage by profiting from differences in the costs of knowledge workers around the world. This is leading companies to focus on 'where to think', leading them to question the role of the appropriately named 'head' office as the primary source of corporate brain-power.

To reduce the time from 'innovation to invoice,' some companies use 24-hour design teams that work around the clock moving through time zones across Asia, Europe and North America. This is not only intended to reduce the time between invention, application, and market launch, but also to reduce costs by taking advantage of lower salary levels in much of Asia. As a senior executive in a German multinational told us, 'we have to drive innovation, we have to be at the leading edge at reasonable cost...we have to try to get higher skills at reasonable cost and high flexibility'.

Yet most of the companies in this study also understood that 'where to think' is more than a question of finding the cheapest locations. It reflects other considerations such as the need for a critical mass of people who understand the organisation or share the collective intelligence necessary for advanced research and development. It is also assumed to reflect the importance of embedded capabilities. Innovation rarely depends on the skills of individuals, companies or universities working in isolation, but instead on a culture of mutual collaboration and purpose. Companies are increasingly building capacity for high end activities including research, design, and product development, in emerging economies.

Although it is difficult to gain an accurate picture of the scale of offshoring, which takes different forms, its impact on employment is likely to be concentrated in sectors such as IT, financial services and the automotive industry. But our interviews suggest that the offshoring of high-skilled jobs will increase in significance as companies gain the confidence and capability to locate high-value activities in low-cost economies. Before 2000, there was virtually no offshoring of high-skilled work in financial services. Today relocations involve front as well as back office functions, including financial analysis, research, regulatory reporting, accounting, human resources and graphic design.⁹

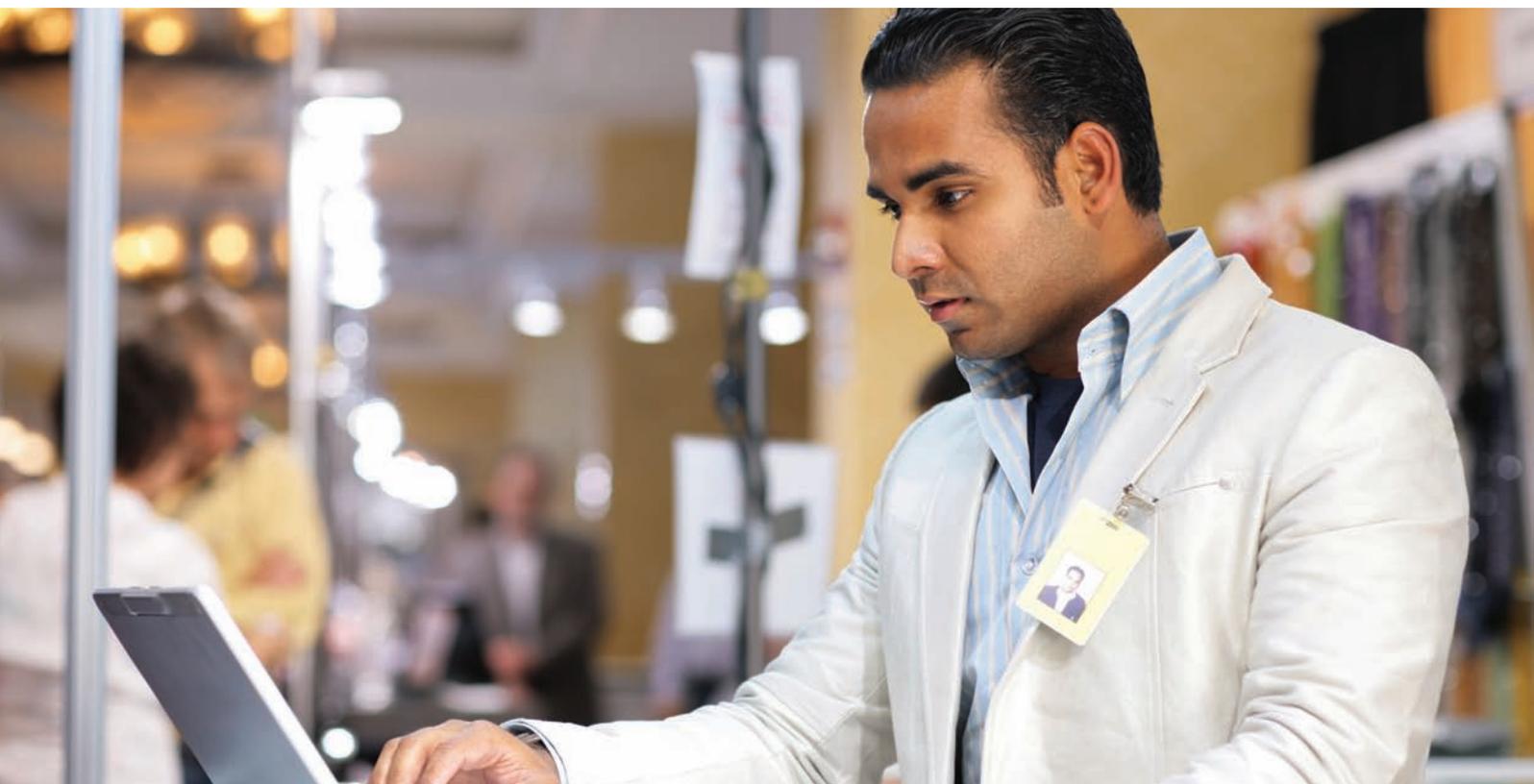
Motorola has invested around US\$3.8 billion since it entered the Chinese market in 1987, including US\$1 billion in R&D. The company has over 10,000 employees, with over 3,000 in R&D, in China.¹⁰ The number of foreign-affiliate R&D centres in China totalled 700 by the end of 2004, including companies such as Microsoft, Nokia, GE, IBM, Siemens, Dupont, General Motors, Philips and Toshiba.¹¹

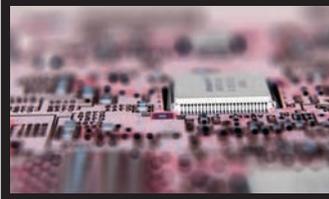


The globalisation of high-skilled work is not only a question of how far offshoring will lead to a decline in demand for middle class managers, professionals, or technically trained workers in the West, but it is also likely to have an impact on job quality, including compensation packages. As differences in productivity narrow between operations in different parts of the world, the cost and working conditions of Western employees are no longer the global benchmark. The benchmark will gravitate towards high-skilled but lower-waged economies rather than those in Western Europe and North America.

Evidence from our global skills project shows that 'where to think' is not only an issue for Western TNCs but also for companies from developing economies with global ambitions. Our research suggests that these 'transitional' companies are constructing a high-value, low-cost model in their attempt to compete for global market share. These cost pressures will not be limited to the indigenous workforce and are likely to be reflected across their global operations.¹²

A separate analysis of the 100 largest transnational companies based on assets (excluding transnationals in the finance sector) shows that over half (52.1 per cent) of their 15.1 million employees were 'foreign' workers in 2005. This represents a 4.2 percentage point rise from 47.9 percent in 1995. One of the problems with these data is that only 40 companies consistently ranked in the top 100 between 1995 and 2005. When data for these forty companies were analysed separately, we found that the proportion of foreign workers increased from 47.6 to 57.6 over the decade. We now need better data so that we can assess in what kinds of jobs 'foreign' workers are employed.





Knowledge work and the rise of digital Taylorism

While much of the business and policy literature has focused on knowledge, innovation and creative enterprise, it has ignored the shift towards global standardisation or alignment within companies, along with efforts to 'capture' and digitalise knowledge that had previously remained locked in the heads of high-skilled workers. We found evidence that companies are attempting to standardise knowledge work through processes that we call Digital Taylorism.¹³

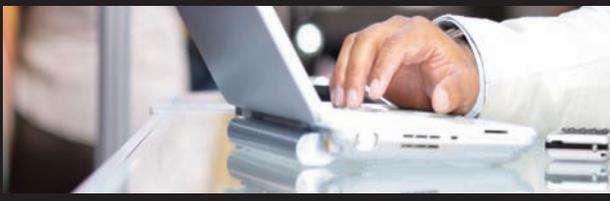
This part of our analysis suggests that if the twentieth century brought mechanical Taylorism, characterised by the Fordist production line, where the knowledge of craft workers was captured, codified and re-engineered in the shape of the moving assembly line by management, the twenty-first century is the age of digital Taylorism. This involves translating knowledge work into working knowledge through the extraction, codification and digitalisation of knowledge into software prescripts and packages that can be transmitted and manipulated by others regardless of location.

Standardisation is well-understood in manufacturing, where the same standard components such as wheels, brake linings, and windscreens can be made in different factories around the world and shipped for final assembly at one location, in the knowledge that all the components meet international quality standards and will fit together. This not only gives companies flexibility but enables them to reduce costs. The same logic is now being applied to service-sector occupations which were previously difficult to standardise because there were no digital equivalents to mechanical drills, jigs, presses and ships, all of which are required to create global supply chains in manufacturing.

Terms such as 'financial services factory' and 'industrialisation' are being applied by leading consultancy companies to describe the transformation of the service sector. Accenture Consulting is a proponent of 'the concept of industrialization – breaking down processes and products into constituent components that can be recombined in a tailored, automated fashion – to non-manufacturing settings'.¹⁴

These trends remain in their craft stage, resembling manufacturing in the early twentieth century. Yet while it took decades for manufacturing to 'lift and shift' through standardisation, the process is likely to be much quicker when applied to service sector employment, because the only hardware you need can fit on the average office desk.¹⁵

The distinction between conception and execution in a period of mechanical Taylorism transformed the relationship between 'working' and 'middle' class occupations, reflected in the UK in academic distinctions between a 'secondary modern' and 'grammar' school education. But digital Taylorism takes the form of a power struggle within the middle classes, as these processes depend on reducing the autonomy and discretion of the majority of well qualified technical, managerial and professional employees. It encourages the segmentation of expertise based on 'talent', in ways that reserve the 'permission to think' to a small proportion of employees responsible for driving the business forward.¹⁶

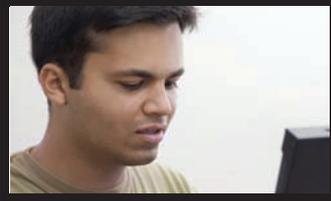
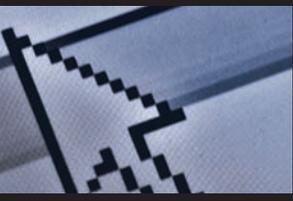


Digital Taylorism does not eliminate the importance of employee motivation or the need for good 'soft' skills such as self-management or customer-facing skills. Standardisation required to achieve mass customisation still needs customers to feel that they are receiving a personalised service. This may contribute to a continuing demand for university graduates, but their occupational roles will be far removed from the archetypal graduate jobs of the past. It raises the intriguing question of the extent to which 'knowledge' work can be standardised, and its impact on the demand for creative knowledge workers and on the returns on investments in higher education.

Changes in business models and practices, such as the 'digital Taylorism' depicted in Brown et al (2008) are interesting for education as they may shape the future of education and education systems...If globalisation and information and communication technology are inducing a second industrial revolution, it is important for educationalists to think of how this might translate to the world of education and tertiary education. What are the kinds of skills, curricula, learning and social experiences that would fit the emergence of this new form of capitalism (digital Taylorism)? Can we think about a more personalised and modularised education? What would the school and university of the digital Taylorism era look like? This will be a fascinating future research agenda.

Stephen Vincent-Lancrin, OECD Paris.¹⁷





Creating a war for talent

Despite the rapid expansion in the supply of highly qualified workers, many managers and executives in all seven countries believed they were in a 'war for talent', a competitive struggle to attract and retain 'top' talent central to their competition strategy. More corporate resources are being focused on attracting, retaining, and developing 'top talent' at the same time that a larger proportion of the labour force hold university degrees. Although all the companies involved in this study anticipated an increase in demand for university graduates, there is little doubt that 'more means different' as companies differentiate their 'knowledge' workers in terms of function, competence and performance.

As companies in this study globalise their HR strategies, especially talent management, it becomes impossible for employers to have first-hand knowledge of universities or the quality of students from different institutions, which explains why reputation and branding become key. Virtually all the companies involved in our study benchmark leading universities around the world based on their own formulations, often in conjunction with public rankings of top universities. A relatively small number of leading universities are then targeted for recruitment, research and training activities.

There is clearly collusion with leading universities as higher education has become a global business. The branding of universities and faculty members is integral to the organisation of academic enquiry. Claims to world-class standards depend on attracting 'the best' academics and forming alliances with elite universities elsewhere in the world, while recruiting the 'right' kinds of students. Universities play the same reputational games as companies, because they are a logical consequence of market competition.

A new global hierarchy of universities as repositories of talent is being created that transforms national hierarchies. This is exemplified by recent reforms in German higher education. Until recently the German system has been based on parity of esteem between universities. There has been little difference in the market value of a degree from one German university rather than another. Now the introduction of excellence reforms is leading more resources to be targeted at a small number of universities. This policy will create an elite in an attempt to lift the profile of German higher education within global rankings of leading universities.

Ripping up the level playing field will transform the positional relationship between students from different universities. In an attempt to recruit the best and to be seen to do so, leading companies will target this elite group, assuming that the most talented students will go to these universities because they are the most difficult to get into. Hence, the idea of a war for talent in Germany is real in its consequences. A likely outcome will be growing income inequalities between German graduates.

The war for talent raises important policy and research questions about why it has come to prominence at the same time as the expansion of higher education around the globe. It also raises questions about the 'wealth of talent' that sits below the talent radar of most companies. In addition, it raises issues of social justice because of social inequalities in recruitment to leading universities and schemes for 'high potential' employees, as well as the growing inequalities in rewards within the hierarchy of knowledge workers.



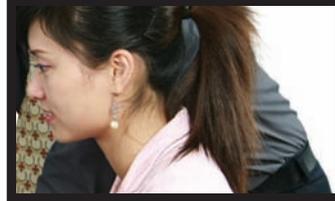
'Everyone is trying to hire from a very small pool, so it really is a war of talent ...it is a complete war'.
Interview in Mumbai

'Yes, you know in China the economy develops very quickly and there is a war, the war is a talent war.'
Interview in Beijing

'We have segmented our employees brutally just in terms of talent. They've gone through quite a tough assessment process over many years now. So we have the group that are recognised as talent, and sadly there is this group who are recognised as not talent. I don't know how I fix that, that's next year's problem. And that group who are talented, we actively manage them in terms of how long have they been in their current role, what's their next role? They get moved around the world quite a bit. They get stretched and out there.'

Interview in London.





The importance of ‘skill’ in corporate investment decisions

This was investigated by examining corporate investment decisions in light of economic policies that place education and skills at the heart of national competitive advantage. It is assumed that inward and outward investment decisions will be determined by the quality of a nation’s education and training as companies seek the best minds and the most skilled workers regardless of nationality.

Our findings show that skills are an important issue in corporate investment decisions. Previous research in the UK had suggested that skills issues were a ‘third order’ priority for British companies. However, asking corporate managers and executives to rank priorities such as market potential, infrastructure, labour costs and quality of the workforce, in making investment decisions is problematic. Having a suitably skilled workforce was ‘mission critical’ to virtually all investment decisions. Asking managers to rank these priorities was like asking which part of the body is most important to overall health. Skills are viewed as a ‘complementary condition’ for efficient organisation. The extent to which they were highlighted depended on the degree of difficulty companies experienced in getting the skilled workforce they required.

There is no doubt that companies evaluate the quality of engineering or accounting graduates in the UK as opposed to Germany, France or Japan in making investment decisions. But although TNCs use data on national education and training systems in making their decisions, companies are increasingly looking to countries that can deliver high skills at low cost. There was little evidence of these companies confronting serious skill shortages, because they are able to source engineers, technicians, and researchers beyond OECD countries.

The development of global skill webs explains a discrepancy between national debates on skills, where there has been a perennial concern about skill shortages and skill gaps, and what most of these companies were telling us. The global HR director for a German transnational company expressed deep concerns about the supply of engineers and scientists from Britain and the United States. However, the company did not experience a shortage because it was employing more Chinese and Russian graduates. At the same time he thought it would take Britain and the United States a long time to catch up with the quality of engineers and scientists being trained in Asia and the Russian Federation.

There is also clear evidence that the companies in this study are developing more sophisticated benchmarks to compare the skill profiles of different countries. They are aware of the OECD’s PISA studies on national educational performance along with global rankings of universities such as that developed by Times Higher Education, but they often want more fine-grained information. In making investment decisions they may look to expand existing projects with specific universities or suppliers, given that they already have on-the-ground information, or they may use consultants to identify a number of potential sites. Their analysis will include an assessment of workforce skill and wage costs.

Moreover, as the companies in this study globalise their HR strategies, especially talent management, they are benchmarking leading universities to target recruitment, research and training activities. While governments operate within a national framework, TNCs adopt an increasingly ‘pick and mix’ strategy, picking talent from leading universities in different countries, including an increasing proportion from low-cost economies.



Qualifications, skills and competence

The policy debate is dominated by a 'human capital' definition and understanding of skill. Global competition is understood as a competition for skills - the more skilled the workforce the more competitive the economy. This leads to policies aimed at up-skilling the workforce, where the goal is to create a more highly skilled economy than one's competitor nations. For the purposes of policy analysis, qualifications are often used as a proxy for skills, as in the Leitch Review of Skills in the United Kingdom. This in turn leads to target-setting aimed at increasing the proportion of the workforce with higher skills to bring the UK in line with, if not ahead of, the qualification levels found in competitor countries.

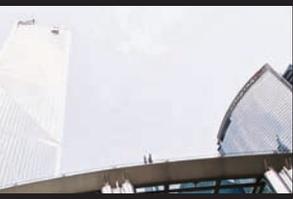
But to what extent do leading companies require more highly skilled labour to compete in the global economy? Does raising the skills of the workforce have the same priority for companies as it does for British policy-makers? The answer to these questions is more complex than is commonly assumed. There are areas where the political agenda does overlap with the employer agenda. TNCs require staff at all levels within their organisations, ranging from those with good basic qualifications in literacy and numeracy to others with higher-level technical and scientific qualifications, for example computer scientists, engineers and scientists. Many of these companies were increasing the proportion of university graduates within the workforce. But it was difficult to assess whether this reflected an increase in the proportion of jobs involving technically difficult roles or 'over-qualification' whereby firms now recruit university graduate for jobs that were previously undertaken by non-graduates, because 'anyone half decent has now got a degree'.

What our studies also revealed was that employers found it difficult to relate to the 'skills' discourse when discussing their own organisations. During interviews, companies typically used a discourse of 'competence' rather than skill. This reflects their over-riding concern with employee 'performance,' which seemed to bear little relationship to formal qualifications or levels of skills. Levels of qualification were important as a measure of 'hard skills' in identifying appropriate candidates, but for virtually all jobs the primary focus was on behavioural competences (soft skills) including initiative, perseverance, time-management and team-working. In all seven countries, employers did not view technical (hard) skills as a major problem. They could easily provide training for those who needed to get up to speed with the latest technical developments. Their major concern was finding suitable people with the appropriate behavioural competences to 'get the job done' or 'take the business forward'.

'Our approach is to deeply understand...the person profile not the skills profile. What does this person need to have in their profile? If we look at our branch network and the individuals working at the front line with our customers, what do we need there? We need high end empathy, we need people who can actually step into the customers' shoes and understand what that feels like. We need people who enjoy solving problems...so now when we recruit we look for that high-end empathy and look for that desire to solve problems, that desire to complete things in our profiles...we can't teach people to be more flexible, to be more empathetic...but we can teach them the basics of banking, we've got core products, core processes, we can teach that quite easily. So we are recruiting against more of the behavioural stuff and teaching the skills stuff, the hard knowledge that you need for the role'.

Global Director of HR, Financial Services.

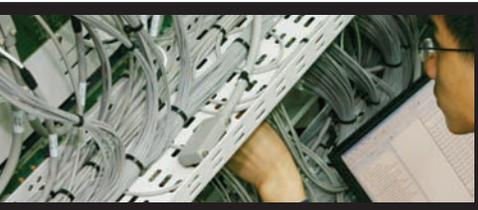




Wider policy implications

- These findings challenge the policy mantra of a high-skills, high-wage economy. While the skills of the workforce remain important, they are not a source of decisive competitive advantage. Many countries, including China and India, are adopting the same tactics. It is how the capabilities of the workforce are combined in innovative and productive ways that holds the key. High-skilled workers in high-cost countries will have to contend with the price advantage of university graduates in developing economies.
- There is also little evidence to support the claim that the value of human capital (skills, knowledge, etc.) will continue to rise even as leading transnational companies restructure their global operations to deliver innovative ideas at the lowest cost. This approach fails to understand how emerging economies, including China and India, are leap-frogging decades of technological development in the West to compete for high-skilled, high-value work, including research and development. In the early decades of the twenty-first century the rise of the high-skill, low-wage workforce may become a feature of the developed as well as the developing economies.
- The interpretation of human capital theory found in official policy discourse is fundamentally flawed because it rests on an evolutionary model in which investments in education and skills are believed to increase as knowledge and skills become the key to increasing productivity and profits. This assumption has always been problematic, but is at best a 'transitional' case in the second half of the twentieth century characterised by educational expansion and a rising middle class.¹⁸ As access to tertiary education becomes widespread within and across countries it has outstripped demand for high-skilled workers, creating downward pressure on the incomes of skilled workers in the developed economies along with some upward pressure on those in emerging economies. The credentials of highly-skilled workers in the West are not subject to the laws of diminishing returns because they are being out-smarted by graduates in China and India, but because companies are discovering new ways of doing the same things in more cost-effective ways.
- While politicians have recently acknowledged that Western countries are going to have to compete with India and China for high-end jobs, official accounts of the global knowledge economy in the developed economies still assume a linear relationship between skills, jobs and rewards, where mass higher education is predicted to reduce income inequalities as people gain access to high skilled, high waged jobs. But the reality is more complex. The expansion of mass higher education in the UK has failed to narrow income inequalities even amongst university graduates. And while all the companies involved in this study anticipated an increase in their demand for university graduates, there is little doubt that 'more means different' as companies differentiate their 'knowledge' workers in terms of function, competences and performance. Despite the massive growth in higher education in Asia, Europe and North America, our respondents believed they were in a 'war for talent', a competition to attract and retain 'top' talent that was central to their competition strategy. Consequently, those defined as 'top talent' enjoy the benefits of corporate largesse, while the majority find themselves in a positional struggle to reap a return on their investments in higher education, in terms of salaries, pensions, career prospects and quality of working life. This reflects a trend towards 'winner-takes-all' markets. People with similar qualifications in the same occupations, organisations and countries are experiencing increasing polarisation in their career prospects, intensifying the positional competition within the middle classes.





While it is too early to reach firm conclusions, we must confront the prospect of a high-skilled, low-waged economy for the UK. This poses a challenge to national governments in affluent economies which continue to assert that differences in income and life chances reflect a meritocratic pyramid of individual achievement. This study shows that creating a high-skilled workforce is only one part of a new economic equation. It is going to require some real knowledge work to achieve a shared prosperity that benefits all. Without it there is a real danger of a political backlash in the developed economies, leading to further calls for protectionist policies like those that have gained ground in the United States. There seems little doubt that a large number of Western employees, including those with higher-level skills, will find themselves floundering in the wake of this new tide of global knowledge capitalism. Whatever happens, there is little doubt that companies will come under increasing pressure to demonstrate corporate social responsibility that will include global HR.

One of the difficulties politicians and policy-makers experience in responding to this challenge is that they are not aware of the speed of change, as many of the forces at work are invisible to them. Although politicians are increasingly aware that the Chinese and Indian economies are producing high-quality graduates and that the West is now competing with them for higher-end jobs, they are not aware of the speed of change or its magnitude. National governments that fail to gain an accurate understanding of today's global business, economic and social context, along with the challenges and opportunities that it poses, are likely to pay a high political price.

The disjunction between education, jobs and rewards has profound implications for our understanding of educational opportunity, justice and social mobility. Ernest Gellner observed that 'modern society is not mobile because it is egalitarian; it is egalitarian because it is mobile'.¹⁹ This suggests that the growing evidence of declining social mobility in parts of Europe, including the UK, and in North America, is not simply due to increasing inequalities in opportunity, but also reflects the transformation of work that we are beginning to capture in this study. Moreover, the role of higher education will be subject to intensive political and educational debate as the returns to knowledge decline for many, and when income inequalities are increasingly seen to be divorced from 'meritocratic' achievement. This will lead to claims that education is failing to meet the needs of industry. In fact the real problem is a failure to lift the demand for 'knowledge' workers to meet the increasing numbers entering the job market with a bachelor's degree.²⁰

If our beliefs about the trend towards Digital Taylorism prove to be accurate, important questions arise about the relationship between education and jobs. Are we witnessing the development of a new correspondence between the modularised, pressurised and metrics-driven system of assessment now found in the English education system, where students are reduced to a set of numerical grades and employment which requires well qualified people capable of handling 'working knowledge'? While we reject the economic determinism inherent in Bowles and Gintis' original account, there seems little doubt that the current view of education for creativity and personal fulfilment bears little relationship to the future employment of many university graduates.²¹ If 'permission to think' is limited to a relatively small proportion of the European workforce, this raises fundamental issues about the role and content of mass higher education.

The rise of a high-skilled, low-waged workforce means increasing inequalities and unmet expectations, and challenges our understanding of justice and efficiency via the connection between education, jobs and rewards. This wider debate raises fundamental questions about how we educate people today as well as how we educate them for tomorrow. The one-dimensional view of education as a preparation for employment is not a reflection of labour market realities, but an attempt to maintain the idea that justice, efficiency and the good life can be achieved through the job market driven by economic growth. There has never been a time when alternative visions of education, economy and society have been more important.





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- ¹⁵ Combined with offshoring the potential is huge as Suresh Gupta (2006) notes 'Our research indicates that when used in conjunction with offshoring, componentization can deliver massive benefits. This model assumes three important capabilities: disaggregating (and digitizing) a process into self-contained components and using broadband to ship them offshore; processing each component using best mix of offshore resources and shipping them back to the original location; and reassembling the 'processed' components into a coherent whole' (p.45, Financial Services Factory, The Capco Institute, Journal of Financial Transformation).



- ¹⁶ We are grateful to Ian Jones, Innovation and Engagement Officer, Cardiff School of Social Sciences, for the term 'permission to think', which he used in discussion with Phil Brown.
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